

Claims

[c1]

An apparatus for filling trays moving on a conveyor with a food product comprising:

- a first servomotor and a second servomotor;
- a computer coupled to the first and second servomotors to operate said servomotors in accordance with computer instructions;
- a food source and a pump having a multiple column output connected to the first servomotor and the food source for forcing food product through the multiple column output;
- a stationary housing connected to the multiple column pump output and having a corresponding multiple outlet apertures;
- a cut-off nozzle connected to the second servomotor and including a rocking cut-off valve extending within the housing, said valve including a plurality of apertures which cooperates with the outlet apertures in the housing in the housing to deposit predetermined amounts of food product in moving trays.

[c2]

An apparatus for filling trays in accordance with Claim 1 wherein:

the multiple column output comprises three tubes and the stationary housing includes three outlet apertures corresponding to the three tubes.

[c3]

An apparatus for filling trays in accordance with Claim 1 wherein:

the second servomotor moves the nozzle from 0 to 50 degrees representing full open on the cut-off valve back to 0 degrees representing full closed on the cut-off valve when a tray appears, said servomotor maintaining the valve in an open position for the target length of the tray.

[c4]

An apparatus for filling trays in accordance with Claim 3 wherein:

the pump provides a forward degree movement for the required tray weight and then makes a reverse move of approximately 10 to 20 degrees for suck back, the servomotor then closes the cut-off valve.

[c5]

An apparatus for filling trays in accordance with Claim 1 wherein:

the pump is a positive displacement gear pump;

the food source is a hopper having an outlet connected to the pump input;

the computer calculates and provides the required weight deposit along with the speed and placement of the deposit on the tray;

the computer is portably mounted adjacent the servomotors;

a sensor to determine when a tray is not present on the belt and signal the computer not to deposit food product through the cut-off nozzle;

each tray includes a pocket within which the food product is deposited, said nozzle being adjustable to deposit the food product in the center of the tray to fill the tray to its maximum or on the side of tray if a partial fill is required;

a tray can be filled with food product ranging upwardly from 1 grams; and

the number of trays filled ranges from 1 to 150 per minute.

[c6]

The method of filling trays comprising the steps of:

moving trays along a conveyor at high speed;

driving a filling pump with a first servomotor;

pumping the food product through a plurality of outlet tubes to a stationary housing;

driving a rocking cut-off valve within the housing with a second servomotor to deposit a predetermined amount of food product in a tray.

[c7]

The method of filling trays in accordance with Claim 6 further including the step of:
controlling the first and second servomotors with a computer.

[c8]

The method of filling trays in accordance with Claim 6 wherein:
the cut-off valve rocks from 0 degrees (closed) to approximately 60 degrees (open).

[c]

An apparatus for filling trays in accordance with Claim 1 wherein:
the amount of rocking movement depends upon the size of the cut-off valve and the
viscosity of the product.